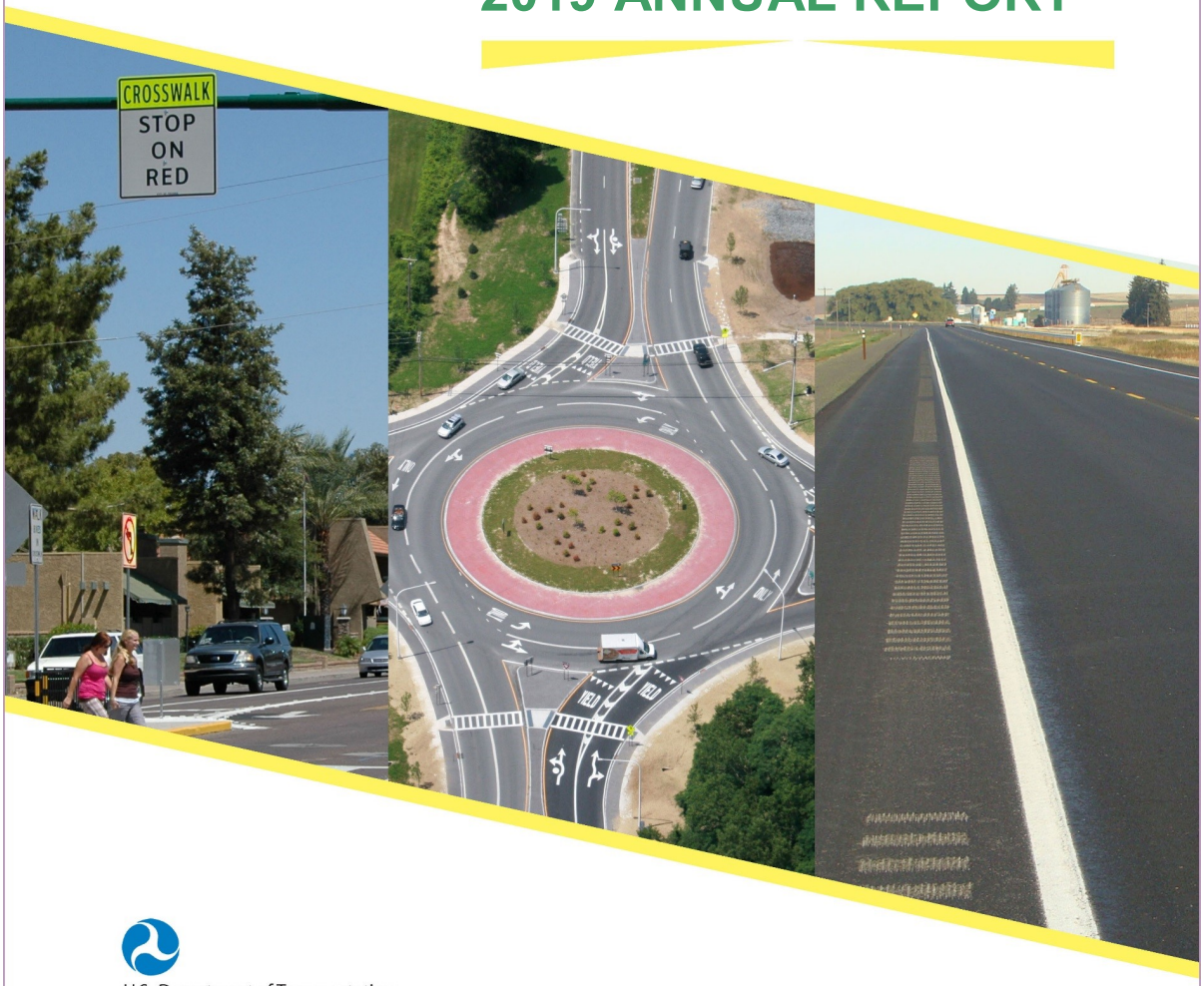
MISSOURI

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2019 ANNUAL REPORT



U.S. Department of Transportation
Federal Highway Administration

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23 U.S.C. 148(h)(4) states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for any purpose relating to this section[HSIP], shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location identified or addressed in the reports, surveys, schedules, lists, or other data.”

23 U.S.C. 409 states “Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.”

Executive Summary

The Missouri Coalition for Roadway Safety and the Missouri Department of Transportation (MoDOT) are dedicated to improving safety of the motoring public through education, engineering, enforcement and emergency medical services initiatives. Safety is one of the Department's core values: "Be Safe." This message is also reinforced in the Department's Practical Design Guide that states, "Safety will not be compromised. Every project we do will make the facility safer after its completion." Additionally, "keeping our customers and ourselves safe" is a MoDOT Tangible Result.

Missouri's Highway Safety Improvement Program (HSIP) is driven by the state's Strategic Highway Safety Plan (SHSP). In October 2016, Missouri introduced its fourth edition of the SHSP and established a highway safety goal of 700 or fewer fatalities by 2020. Missouri's Blueprint: A Partnership to Zero Deaths guides the State's safety initiatives and addresses safety from a comprehensive standpoint including engineering, enforcement, education, emergency medical services, technology and public policy solutions. The Blueprint focuses on implementing strategies that will reduce both fatal and serious injuries on Missouri roadways. The Blueprint and the statewide fatality goal are considered in the development and implementation of each of the Department's highway safety plans.

Evidenced-based decision-making is paramount to a sound safety program. Data analysis is a critical part of identifying overrepresented crash types, locations, driver age, driver gender, and driver behaviors. These findings guide the deployment of effective and appropriate strategies to improve safety on the entire system. Efforts are made to analyze fatal and serious injury crashes to help discern where limited safety funding should be applied so that maximum safety improvements and benefits are attained.

Fatalities reached a low point in 2013 with 757 fatalities and climbed to 947 in 2016. A similar increasing trend occurred for serious injuries which climbed from 4573 in 2015 to 4887 in 2017. This increasing trend in fatalities and serious injuries has since been halted and Missouri is now seeing a decreasing number of fatalities and serious injuries. In 2018, there were 921 fatalities and 4708 serious injuries on Missouri roadways. This decreasing trend could be attributed to the systemic initiatives and high benefit spot treatments being deployed as part of Missouri's HSIP program as well as other efforts to change the safety culture of Missouri's motorists.

Introduction

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. As per 23 U.S.C. 148(h) and 23 CFR 924.15, States are required to report annually on the progress being made to advance HSIP implementation and evaluation efforts. The format of this report is consistent with the HSIP Reporting Guidance dated December 29, 2016 and consists of five sections: program structure, progress in implementing highway safety improvement projects, progress in achieving safety outcomes and performance targets, effectiveness of the improvements and compliance assessment.

Program Structure

Program Administration

Describe the general structure of the HSIP in the State.

The overall HSIP is administered by MoDOT's Highway Safety and Traffic Division. However, the division does not typically identify individual projects as part of this process. Instead, HSIP funds are distributed to each of MoDOT's seven districts based on a three-year average of the number of fatalities and serious injuries. From there, each district identifies how their share of HSIP funds will be programmed in accordance with Missouri's SHSP and MoDOT guidance. The districts carry out the projects to completion, and all HSIP projects are reported by the Highway Safety and Traffic Division. Occasionally, statewide safety projects may be carried out by the Highway Safety and Traffic Division. Missouri's HSIP is primarily developed by MoDOT. However, since the state's SHSP involves input from external stakeholders throughout the state, the HSIP is influenced by external partners as well.

Where is HSIP staff located within the State DOT?

Operations

The Highway Safety and Traffic Division leads the HSIP reporting effort. The District Traffic Offices facilitate the selection of HSIP projects and implement the HSIP program.

How are HSIP funds allocated in a State?

- Formula via Districts/Regions

The Highway Safety and Traffic Division also have some HSIP funds distributed to them.

In January of 2018, the Missouri Highways and Transportation Commission approved the use of a new formula for distributing safety funds to MoDOT's Districts. This new formula places more focus on areas where fatalities and serious injuries are occurring. This new distribution will take effect in 2021.

Describe how local and tribal roads are addressed as part of HSIP.

Our local roads are included in the crash data system analysis. We evaluate all roadways in the state and place emphasis on severe crashes. This analysis is performed for both intersections and non-intersection locations. To date we have used an analysis method, which places weight on the severe crashes and locations that have experienced a higher frequency of severe crashes and are often those that will find their way on our

locations of interest list. While most of the locations to date have been on the state system roadways, we have recently seen a few of the local roads locations make these lists. While we continue to believe that the majority of the problem locations will be state system locations, we have evaluated non-state system severe crash locations and have determined that 53% of our non-state system fatalities are in seven counties (Jackson, Jefferson, Greene, Boone, St. Charles, St. Louis City, and St. Louis County). Local strategic highway safety plans (SHSP) have been developed for the top counties experiencing severe crashes. The local SHSPs identify systemic countermeasures and projects. We also communicate the locations of interest to planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions.

We also work with our LTAP center to continue to move safety forward in our state. Beginning this fiscal year, MoDOT will be piloting a Safety Circuit Rider program through the LTAP center. This would provide an safety expert to work with local agencies that may not have the staff required to develop a local road safety plan or identify safety countermeasures for issues in there areas.

Additionally, we have used the RSA process to better address local road issues on occasion, we have a Transportation Engineering Assistance Program (TEAP) to assist locals, and we also have a subcommittee from our SHSP that focuses on infrastructure improvement opportunities for local roads.

Identify which internal partners (e.g., State departments of transportation (DOTs) Bureaus, Divisions) are involved with HSIP planning.

- Design
- Districts/Regions
- Governors Highway Safety Office
- Maintenance
- Operations
- Planning
- Traffic Engineering/Safety

There is some overlap in these selections with the way MoDOT is structured. Traffic engineering/safety could be included under operations, however operations is more inclusive in other traffic areas that both were selected.

Describe coordination with internal partners.

MoDOT has focused for some time on system-wide safety solutions. We have worked with our Design Division to address our Engineering Policy, our Operations and Maintenance staff to improve the roadsides, and our Planning staff to better evaluate and select safety needs for improvements. We have also worked with the previously mentioned internal partners on the training and use of the Highway Safety Manual (HSM). Additionally, we work daily with the Highway Safety office to evaluate and monitor the crash types. It is vital that all areas in our department work together and focus on safety improvements. We have also worked with FHWA's resource center to provide training to our staff on a variety of areas associated with safety, such as HSM training, RSA training, and STEP training.

MoDOT has also begun reporting on the safety benefits of all projects utilizing HSIP funds as part of an internal assessment of our HSIP program. This assessment is used as part of a vetting process for safety projects planned to be incorporated into the State Transportation Improvement Program.

Identify which external partners are involved with HSIP planning.

- Academia/University

- FHWA
- Governors Highway Safety Office
- Law Enforcement Agency
- Local Government Agency
- Regional Planning Organizations (e.g. MPOs, RPOs, COGs)
- Other-National Highway Traffic Safety Administration
- Other-Federal Motor Carrier Safety Administration
- Other-Emergency Services, Department of Revenue, etc

Describe coordination with external partners.

Missouri's Strategic Highway Safety Plan (SHSP) is the umbrella document that identifies emphasis areas and prioritizes strategies for reducing fatalities and serious injuries on all Missouri roadways. The development of the SHSP utilized significant involvement from external stakeholders throughout the state, including metropolitan planning organizations and local government agencies.

MoDOT has also identified the top counties where non-state system fatalities have occurred and worked with them to develop localized strategic safety plans. These plans identify systemic countermeasures and spot treatment projects. We also work with our LTAP center to continue to move safety forward in our state. Beginning this fiscal year, MoDOT will be piloting a Safety Circuit Rider program through the LTAP center. This would provide an safety expert to work with local agencies that may not have the staff required to develop a local road safety plan or identify safety countermeasures for issues in there areas.

Additionally, when setting the new safety performance targets, MoDOT had an inclusive process which thoroughly involved collaboration with our MPOs and other planning partners to come to a consensus on the 2020 targets.

Describe HSIP program administration practices that have changed since the last reporting period.

MoDOT has also begun reporting on the safety benefits of all projects utilizing HSIP funds as part of an internal assessment of our HSIP program. This assessment is used as part of a vetting process for safety projects planned to be incorporated into the State Transportation Improvement Program.

Describe other aspects of HSIP Administration on which the State would like to elaborate.

Safety initiatives continue to be driven by the State SHSP. The State SHSP includes numerous safety initiatives that are data driven. Each district develops a regional district safety plan for their available HSIP funds. These district plans must support the overarching goals of the statewide SHSP at the district level.

Program Methodology

Does the State have an HSIP manual or similar that clearly describes HSIP planning, implementation and evaluation processes?

No

MoDOT has an EPG article that outlines the safety program guidelines.

Select the programs that are administered under the HSIP.

- Horizontal Curve
- Intersection
- Median Barrier
- Roadway Departure
- Skid Hazard
- Wrong Way Driving

While no HSIP funds have been spent on local roadways, MoDOT's District staff shares this program information with our local agency partners to help prioritize projects and assist with the development of their localized safety plans.

Program: Horizontal Curve

Date of Program Methodology:2/8/2013

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only	Volume	Horizontal curvature

What project identification methodology was used for this program?

- Crash frequency
- Excess proportions of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative:2
Other-Severity Index:1

Risk factors focused on this crash type have been developed to identify locations would benefit from a systemic safety treatment.

We communicate the locations of interest to planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions.

Program: Intersection

Date of Program Methodology:1/21/2009

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only	Volume	Functional classification

What project identification methodology was used for this program?

- Crash frequency
- Excess proportions of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative:2
Other-Severity Index:1

We communicate the locations of interest to planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions.

Program: Median Barrier

Date of Program Methodology:9/27/2002

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only	Volume	Median width Horizontal curvature Functional classification Roadside features

What project identification methodology was used for this program?

- Crash frequency
- Excess proportions of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative:1

Risk factors focused on this crash type have been developed to identify locations would benefit from a systemic safety treatment.

Program: Roadway Departure

Date of Program Methodology:10/1/2004

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only	Volume	Functional classification

What project identification methodology was used for this program?

- Crash frequency
- Excess proportions of specific crash types
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative:2
Other-Severity Index:1

Risk factors focused on this crash type have been developed to identify locations would benefit from a systemic safety treatment.

We communicate the locations of interest to planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions.

Program: Skid Hazard

Date of Program Methodology:2/8/2013

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only Other-Wet pavement crashes		Horizontal curvature

What project identification methodology was used for this program?

- Crash frequency
- Excess proportions of specific crash types
- Other-Wet/Dry Crash Ratio
- Relative severity index

Are local roads (non-state owned and operated) included or addressed in this program?

Yes

Are local road projects identified using the same methodology as state roads?

Yes

How are projects under this program advanced for implementation?

- Other-Systemic evaluation

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic safety initiative:0
Other-Wet/Dry Crash Ratio:1

We communicate the locations of interest to planning entities like our Metropolitan Planning Organizations and Regional Planning Commissions.

Program: Wrong Way Driving

Date of Program Methodology:6/1/2017

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
All crashes Fatal and serious injury crashes only	Volume	Functional classification

What project identification methodology was used for this program?

- Crash frequency

Are local roads (non-state owned and operated) included or addressed in this program?

No

Are local road projects identified using the same methodology as state roads?

How are projects under this program advanced for implementation?

- Competitive application process

Select the processes used to prioritize projects for implementation. For the methods selected, indicate the relative importance of each process in project prioritization. Enter either the weights or numerical rankings. If weights are entered, the sum must equal 100. If ranks are entered, indicate ties by giving both processes the same rank and skip the next highest rank (as an example: 1, 2, 2, 4).

Rank of Priority Consideration

Other-Systemic Safety Initiative:1

What percentage of HSIP funds address systemic improvements?

60

HSIP funds are used to address which of the following systemic improvements?

- Cable Median Barriers
- High friction surface treatment
- Horizontal curve signs
- Install/Improve Lighting
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Pavement/Shoulder Widening
- Rumble Strips
- Upgrade Guard Rails
- Wrong way driving treatments

What process is used to identify potential countermeasures?

- Crash data analysis
- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- Road Safety Assessment
- SHSP/Local road safety plan
- Stakeholder input
- Other-Enforcement and other stakeholders input.
- Other-Peer Exchange - lessons learned

All of the countermeasure identification processes listed here are applicable to MoDOT's countermeasure selection, although they vary depending on how the safety need was identified (Systemic, Spot, RSA).

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

Describe how the State HSIP considers connected vehicles and ITS technologies.

Emphasis Area 1 of Missouri's Strategic Highway Safety Plan targets Serious Crash Types. In this emphasis area, six focus areas were identified.

Lane Departure

- Run-Off-Road - Not in a Curve
- Run-Off-Road - In a Curve
- Collision with Tree and/or Utility Pole
- Head-On

Intersections

- Non-signalized
- Signalized

Each of these focus areas have key strategies identified, including supporting vehicle-to-infrastructure communications. MoDOT is exploring the use of 3rd party partnerships to provide motorist in vehicle information related to traffic signals. This information could be provided to the motorist through the dashboard of their vehicle or through a mobile application.

MoDOT is also actively pursuing the use of autonomous Truck Mounted Attenuators (TMAs) for mobile work zones. Two autonomous TMAs are currently being tested in a pilot project.

Does the State use the Highway Safety Manual to support HSIP efforts?

Yes

Please describe how the State uses the HSM to support HSIP efforts.

The HSM is encouraged to be used when performing alternative analysis of safety countermeasures for particular projects. This often involves using crash modification factors from the CMF clearing house.

The HSM is also used to develop anticipated safety benefits for a project, which is used to both justify using safety funds and prioritizing the project.

More recently, MoDOT developed a systemic evaluation tools for commonly used safety countermeasures. These tools provide information regarding the anticipated value that the systemic improvement may have, based on identified risk factors.

Describe program methodology practices that have changed since the last reporting period.

MoDOT has developed systemic evaluation tools for commonly used safety countermeasures. These tools provide information regarding the anticipated value that the systemic improvement may have, based on identified risk factors.

MoDOT has begun reporting the quantifiable safety benefits of all projects utilizing HSIP funds as part of an

internal assessment of our HSIP program. This assessment is used as part of a vetting process for safety projects planned to be incorporated into the State Transportation Improvement Program.

Describe other aspects of the HSIP methodology on which the State would like to elaborate.

MoDOT uses data driven safety analysis to identify the top crash types occurring in Missouri and developed a list of strategies focused on addressing these crash types. Additionally, MoDOT develops lists of various locations of interest that identify where there may be safety concerns based on various criteria, such as:

- High Severity Locations (Intersections/Range)
- Run Off Road Crash Locations (Curves and No Shoulders)
- Wet Crash Locations
- Crossed Centerline Crash Locations

Details regarding MoDOT's Safety Program can be found in MoDOT's Engineering Policy Guide 907.1.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

State Fiscal Year

Enter the programmed and obligated funding for each applicable funding category.

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$47,849,000	$81,076,293	169.44%
HRRR Special Rule (23 U.S.C. 148(g)(1))	$0	$0	0%
Penalty Funds (23 U.S.C. 154)	$12,071,000	$14,785,543	122.49%
Penalty Funds (23 U.S.C. 164)	$0	$0	0%
RHCP (for HSIP purposes) (23 U.S.C. 130(e)(2))	$0	$0	0%
Other Federal-aid Funds (i.e. STBG, NHPP)	$0	$0	0%
State and Local Funds	$5,098,000	$9,008,477	176.71%
Totals	$65,018,000	$104,870,313	161.29%

One of the reasons for the difference between the total programmed funds and obligated funds is due to MoDOT's retroreflectivity striping and guardrail upgrades programs. Estimates for these programs were not included in the programmed numbers above. However, they are included in the obligated number above, which were 22M for striping and 18M for guardrail upgrades.

Another item of note are the programmed and obligated 154 penalty (open container) funds. Given the fact that the federal fiscal year ends in September and the state fiscal year ends in June, there are some safety projects programmed with open container funds that will be obligated in the following state fiscal year.

How much funding is programmed to local (non-state owned and operated) or tribal safety projects?

0%

How much funding is obligated to local or tribal safety projects?

0%

How much funding is programmed to non-infrastructure safety projects?

1%

How much funding is obligated to non-infrastructure safety projects?

1%

The only non-infrastructure safety projects using HSIP funds are for work zone enforcement.

How much funding was transferred in to the HSIP from other core program areas during the reporting period under 23 U.S.C. 126?

0%

How much funding was transferred out of the HSIP to other core program areas during the reporting period under 23 U.S.C. 126?

0%

Discuss impediments to obligating HSIP funds and plans to overcome this challenge in the future.

Asset management is a relatively new practice being implemented by MoDOT. By performing asset management MoDOT will ensure they are able to maintain the existing transportation network. Implementing new safety improvements that will add to the transportation system can be a challenge to fund in Districts that are unable to meet their asset management goals. It has been proposed to include HSIP projects into MoDOT's asset management process to ensure the safety improvements constructed will be able to be maintained into the future.

General Listing of Projects

List the projects obligated using HSIP funds for the reporting period.

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Add signs for wrong way movements at various ramp locations. Andrew, Atchison, Buchanan, and Holt Counties.	Roadway signs and traffic control	Roadway signs and traffic control - other	29	Ramps	$307800	$342000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	15,200	70	State Highway Agency	Systemic	Intersections	Serious Crash Types
Pavement resurfacing, add rumblestripes, and upgrade guardrail from Rte. 752, in St. Joseph, to Platte County line. $500,000 Open Container funds.	Shoulder treatments	Widen shoulder - paved or other	13	Miles	$680000	$2703000	Penalty Funds (23 U.S.C. 154)	Urban	Minor Arterial	1,322	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Pavement resurfacing and add rumblestripes from Marceline to Rte. 24 in Keytesville.	Roadway	Rumble strips - edge or shoulder	20	Miles	$1188900	$3138000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	691	55	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
Pavement resurfacing and add rumblestripes from Rte. T, in Forest City, to Rte. 59 in Oregon.	Roadway	Rumble strips - edge or shoulder	2.5	Miles	$78300	$449000	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,151	55	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
Pavement resurfacing and add rumblestripes from Iowa State line to Rte. 71 near Maryville.	Roadway	Rumble strips - edge or shoulder	14	Miles	$540000	$2172000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,466	60	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
Pavement resurfacing and add rumblestripes	Roadway	Rumble strips - edge or shoulder	15	Miles	$1306200	$2690000	Penalty Funds (23 U.S.C. 154)	Rural	Principal Arterial-Other	2,488	55	State Highway Agency	Systemic	Lane Departure	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
from the Chariton River near Novinger to the east city limits of Green Castle and add rumblestripes from th															
Add roundabout at intersection of Rte. BB and Rte. 19 south junction (Scott's Corner), south of Laddonia. $939,000 Open Container funds.	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$1761600	$1853000	Penalty Funds (23 U.S.C. 154)	Rural	Principal Arterial-Other	4,778	50	State Highway Agency	Spot	Intersections	Serious Crash Types
Add intersection turn lanes at Rte. KK near Troy.	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	1	Intersections	$448200	$556000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	21,088	60	State Highway Agency	Spot	Intersections	Serious Crash Types
Signage upgrade for wrong way countermeasures at various ramp locations. $135,000 Statewide Safety funds.	Roadway signs and traffic control	Roadway signs and traffic control - other	11	Ramps	$121500	$135000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	24,056	55	State Highway Agency	Systemic	Intersections	Serious Crash Types
Pavement resurfacing and add rumblestripes from 0.9 mile south of Rte. 54 east junction in Louisiana to Lincoln County line.	Roadway	Rumble strips - edge or shoulder	21	Miles	$469800	$3073000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,115	60	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
Interchange improvements at I-435 within the limits of Kansas City. $2,558,000 Open Container funds. Project involves bridges A0990, A0991, A0992 and	Interchange design	Interchange design - other	1	Interchanges	$5798000	$41233000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	63,383	65	State Highway Agency	Systemic	Intersections	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Adding Wrong Way, Do Not Enter and One Way Signing at various ramp locations.	Roadway signs and traffic control	Roadway signs and traffic control - other	31	Interchanges	$413100	$459000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	64,531	70	State Highway Agency	Systemic	Intersections	Serious Crash Types
Add intersection turn lanes at Rte. AA, Rte. Z/W and County Road 1801. $458,000 Open Container funds.	Intersection geometry	Auxiliary lanes - add left-turn lane	4	Intersections	$3497300	$3835000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other Freeways & Expressways	9,948	65	State Highway Agency	Spot	Intersections	Serious Crash Types
Adding Wrong Way, Do Not Enter and One Way Signing at various ramp locations.	Roadway signs and traffic control	Roadway signs and traffic control - other	10	Interchanges	$239400	$266000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	14,725	70	State Highway Agency	Systemic	Intersections	Serious Crash Types
Remove islands and restripe Rte. 45 at Klamm Road and Rte. 45 at Riss Lake Drive.	Intersection geometry	Splitter island - remove from one or more approaches	2	Intersections	$63900	$71000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	8,756	45	State Highway Agency	Spot	Intersections	Serious Crash Types
Pavement striping at various intersections throughout the urban Kansas City District. $350,000 District Operations Budget.	Intersection traffic control	Pavement markings - miscellaneous/other/unspecified	127	Intersections	$360000	$750000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	5,934	35	State Highway Agency	Spot	Intersections	Serious Crash Types
Sign and truss replacement at various locations in the urban Kansas City District. $200,000 District Operating funds.	Roadway signs and traffic control	Roadway signs (including post) - new or updated	527	Signs	$3600	$1224000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	39,847	65	State Highway Agency	Systemic	Older Drivers	Vulnerable Roadway Users
Pavement resurfacing, add shoulders and rumblestripes from 0.2 mile	Roadway	Rumble strips - edge or shoulder	15	Miles	$1421100	$3968000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	900	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
east of Rte. C at Fulton to Rte. D.															
Safety improvements for wrong way countermeasures at various ramp locations.	Roadway signs and traffic control	Roadway signs and traffic control - other	43	Ramps	$388800	$432000	HSIP (23 U.S.C. 148)	Multiple/Varies	Principal Arterial-Interstate	2,000	70	State Highway Agency	Systemic	Intersections	Serious Crash Types
Pavement resurfacing and add shoulders from Rte. 19 to Rte. 32 in Iron County, Rte. 19 near Gasconade County Line to Rte. 49 and Rte. ZZ from 0.1 mile	Roadway	Rumble strips - edge or shoulder	20	Miles	$1810800	$4736000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,200	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Widen intersection and add turn lane at the Rte. 133 intersection near Westphalia.	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$27000	$846000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	10,000	55	State Highway Agency	Spot	Intersections	Serious Crash Types
Add turn lanes and acceleration lanes at Flucom Road south of Olympian Village. $867,000 Open Container funds.	Intersection geometry	Auxiliary lanes - add left-turn lane	1	Intersections	$1816500	$1922000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	25,737	65	State Highway Agency	Spot	Intersections	Serious Crash Types
Add intersection southbound turn lanes at Amvets Drive in Desoto and Hilltop Mobile Home Court in Hillsboro.	Intersection geometry	Auxiliary lanes - add left-turn lane	2	Intersections	$759600	$1231000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	18,090	55	State Highway Agency	Spot	Intersections	Serious Crash Types
Add chevrons to curves at various locations throughout Jefferson County.	Roadway signs and traffic control	Curve-related warning signs and flashers	18	Curves	$254700	$283000	HSIP (23 U.S.C. 148)	Urban	Major Collector	2,000	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Pavement resurfacing, adding shoulders, bridge replacement, and super-elevated curve correction from I-70 South Outer road in Foristell to Rte. TT nea	Shoulder treatments	Shoulder treatments - other	13	Miles	$7894900	$8456000	HSIP (23 U.S.C. 148)	Rural	Major Collector	4,942	55	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Adding signing and striping for wrong way counter-measures at various ramp locations throughout the St. Louis District along I-70, I-55 and I-170.	Roadway signs and traffic control	Roadway signs and traffic control - other	68	Ramps	$826200	$918000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	108,098	55	State Highway Agency	Systemic	Intersections	Serious Crash Types
Replace signals, upgrade signal detection and upgrade pedestrian facilities to comply with ADA Transition Plan on Natural Bridge Avenue at various loc	Intersection traffic control	Modify traffic signal - modernization/replacement	14	Intersections	$1692000	$3683000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	16,211	35	State Highway Agency	Spot	Intersections	Serious Crash Types
Add reflective back-plates to signals on various routes in Franklin and Jefferson Counties.	Intersection traffic control	Modify traffic signal - add backplates with retroreflective borders	122	Signal heads	$136800	$152000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	37,867	55	State Highway Agency	Systemic	Intersections	Serious Crash Types
Pavement resurfacing, guardrail upgrades, and upgrading pedestrian facilities to comply with ADA Transition Plan	Pedestrians and bicyclists	Pedestrian signal - install new at intersection	6	Intersections	$164000	$1668000	Penalty Funds (23 U.S.C. 154)	Urban	Minor Arterial	21,746	45	State Highway Agency	Spot	Intersections	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
from Norwood Trailer Drive to 3rd Str															
Add J-Turns between Independence Road and Wolfrum Road. $1,393,000 Open Container.	Access management	Median crossover - directional crossover	1	Crossovers	$1393000	$1393000	Penalty Funds (23 U.S.C. 154)	Urban	Principal Arterial-Other	40,089	55	State Highway Agency	Spot	Intersections	Serious Crash Types
Pavement resurfacing from Rte. 60 to Rte. 39 and pavement resurfacing, add shoulders and rumblestripes on Rte. TT from Rte. 39 to Rte. D in Stone Coun	Roadway	Rumble strips - edge or shoulder	6.9	Miles	$203400	$1378000	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,349	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Pavement resurfacing and upgrade guardrail from Rte. 65 to Rte. 54 and on Rte. MM from Rte. 65 to end of route. Project involves bridge A3689.	Roadside	Barrier- metal	450	Feet	$453600	$3018000	HSIP (23 U.S.C. 148)	Rural	Minor Arterial	1,057	55	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Pavement resurfacing from 0.4 mile north of Finley Creek to Reeds Spring Junction and on Rte. 13 from Reeds Spring Junction to Table Rock Lake. Add tu	Intersection geometry	Auxiliary lanes - extend existing left-turn lane	7	Intersections	$117900	$5595000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	6,987	60	State Highway Agency	Systemic	Intersections	Serious Crash Types
Pavement resurfacing from south of South Street in Nixa to 0.4 mile north of Finley Creek, and add turn	Intersection geometry	Auxiliary lanes - add left-turn lane	8	Intersections	$128700	$1000000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	5,600	60	State Highway Agency	Spot	Intersections	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
lane at Rosedale Road.															
Add intersection turn lanes and upgrade signals on Massey Boulevard at Tracker Road and Northview Road in Nixa. $237,600 Nixa, $950,400 Nixa STBG-Urba	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	2	Intersections	$159300	$1790000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	10,638	50	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Add lanes, sidewalk and pedestrian signals, and upgrade sidewalk to comply with the ADA Transition Plan on South Street from Rte. 65 to Rte. 14 (3rd S	Roadway	Roadway widening - add lane(s) along segment	2.4	Miles	$450000	$3538000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	17,410	55	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Pavement resurfacing and guardrail improvements from beginning of state maintenance to Farm Road 60 and on Rte. F from Rte. 160 to Rte. 266. Project i	Roadside	Barrier- metal	600	Feet	$10800	$1061000	HSIP (23 U.S.C. 148)	Urban	Major Collector	532	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Add lanes for four-lane expressway from 0.3 mile west of County Road 94 to 0.4 mile west of I-44, and construct J-turn at Westgate Avenue.	Access management	Median crossover - directional crossover	1	Intersections	$175500	$8752000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	14,540	60	State Highway Agency	Spot	Intersections	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Pavement resurfacing and upgrade guardrail from north of Plainview Road to north of Rte. 14 in Nixa. Modify turn lane configuration at Aldersgate Driv	Intersection geometry	Auxiliary lanes - modify left-turn lane offset	2	Intersections	$1045800	$3951000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	12,748	60	State Highway Agency	Spot	Intersections	Serious Crash Types
Add roundabout at County Road 103 and Repmo Drive in Republic. $169,330 Republic, $78,870 Republic R-3 School District, and $992,800 Republic STBG-Urb	Intersection traffic control	Modify control - two-way stop to roundabout	1	Intersections	$616500	$1926000	HSIP (23 U.S.C. 148)	Urban	Minor Arterial	5,788	55	State Highway Agency	Spot	Intersections	Serious Crash Types
Add J-turn at County Road 157, add turn lanes at County Road 192 and add a southbound turn lane from Plainview Road to County Road 157.	Access management	Median crossover - directional crossover	1	Intersections	$1692900	$1881000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	17,650	60	State Highway Agency	Spot	Intersections	Serious Crash Types
Pavement resurfacing, add shoulders and rumblestripes from 0.2 mile east of Rte. 65 to Rte. 125.	Roadway	Rumble strips - edge or shoulder	4.4	Miles	$209700	$704000	HSIP (23 U.S.C. 148)	Urban	Major Collector	3,245	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Pavement resurfacing, and pedestrian crossing safety improvements from Farm Road 60 to Rte. 160.	Pedestrians and bicyclists	Crosswalk	3	Crosswalks	$14400	$236000	HSIP (23 U.S.C. 148)	Urban	Major Collector	2,106	55	State Highway Agency	Spot	Pedestrians	Vulnerable Roadway Users

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Pavement resurfacing and guardrail improvements on disconnected sections of Eastgate Ave. from Division St. (Rte. YY) to Sunshine St. (Rte. D) and on	Roadside	Barrier- metal	3350	Feet	$107100	$504000	HSIP (23 U.S.C. 148)	Urban	Major Collector	6,347	40	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Pavement resurfacing, add shoulders to Rte. OO and pullouts to Rte. C and add rumblestripes on Rte. OO from Rte. B to Rte. 38, on Rte. C from Rte. 38	Roadway	Rumble strips - edge or shoulder	8.3	Miles	$162000	$2133000	HSIP (23 U.S.C. 148)	Rural	Minor Collector	3,264	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
Safety signage improvements in the rural Southwest District. $806,000 Open Container funds.	Roadway delineation	Roadway delineation - other	140	Curves	$806000	$806000	Penalty Funds (23 U.S.C. 154)	Urban	Principal Arterial-Other	1,500	55	State Highway Agency	Systemic	Roadway Departure	Serious Crash Types
High friction surface treatments 3 miles west of Rte. B near Northview and on the westbound lanes 2 miles west of Rte. 38 in Marshfield. $809,000 Open	Roadway	Pavement surface - high friction surface	2	Locations	$809000	$809000	Penalty Funds (23 U.S.C. 154)	Rural	Principal Arterial-Interstate	17,685	70	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
Modify interchange configuration from Old Orchard Road to 0.2 mile south of Veteran's Memorial Drive. $310,500 city of	Interchange design	Interchange design - other	1	Interchanges	$3692700	$6749000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other Freeways & Expressways	4,202	45	State Highway Agency	Spot	Intersections	Serious Crash Types

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Cape Girardeau funds and $256,2															
Pavement resurfacing and add rumblestripes from Rte. BB to Rte. 51.	Roadway	Rumble strips - edge or shoulder	16	Miles	$1855800	$2622000	HSIP (23 U.S.C. 148)	Rural	Major Collector	1,942	55	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
Retroreflectivity of roadway markings.	Roadway delineation	Improve retroreflectivity	63000	Miles	$20086200	$22318000	HSIP (23 U.S.C. 148)	Multiple/Varies	Multiple/Varies	50,000	55	State Highway Agency	Systemic	Lane Departure	Serious Crash Types
On-call work zone enforcement at various locations in the Northwest District.	Non-infrastructure	Enforcement	1	Initiative	$9000	$10000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
On-call work zone enforcement at various locations in the Northeast District.	Non-infrastructure	Enforcement	1	Initiative	$9000	$10000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
On-call work zone enforcement at various locations in the rural Kansas City District.	Non-infrastructure	Enforcement	1	Initiative	$9900	$11000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
On-call work zone enforcement at various locations in the urban Kansas City District.	Non-infrastructure	Enforcement	1	Initiative	$145800	$162000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
On-call work zone enforcement at various locations in the St. Louis District.	Non-infrastructure	Enforcement	1	Initiative	$675000	$750000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Other	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
On-call work zone enforcement at	Non-infrastructure	Enforcement	1	Initiative	$59400	$66000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	50,000	70	State Highway Agency	Systemic	Work Zones	Special Roadway

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
various locations in the rural Southwest District.															Environments
On-call work zone enforcement at various locations in the urban Southwest District.	Non-infrastructure	Enforcement	1	Initiative	$159300	$177000	HSIP (23 U.S.C. 148)	Urban	Principal Arterial-Interstate	50,000	70	State Highway Agency	Systemic	Work Zones	Special Roadway Environments
Pavement resurfacing and add rumblestrips from Riverview Drive to Rte. 60. $1,662,000 Open Container funds.	Roadway	Rumble strips - edge or shoulder	12.4	Miles	$1662000	$3223000	Penalty Funds (23 U.S.C. 154)	Rural	Minor Arterial	5,258	55	State Highway Agency	Spot	Roadway Departure	Serious Crash Types
On-call work zone enforcement at various locations in Southeast District.	Non-infrastructure	Enforcement	1	Initiative	$36000	$40000	HSIP (23 U.S.C. 148)	Rural	Principal Arterial-Other	50,000	55	State Highway Agency	Systemic	Work Zones	Special Roadway Environments

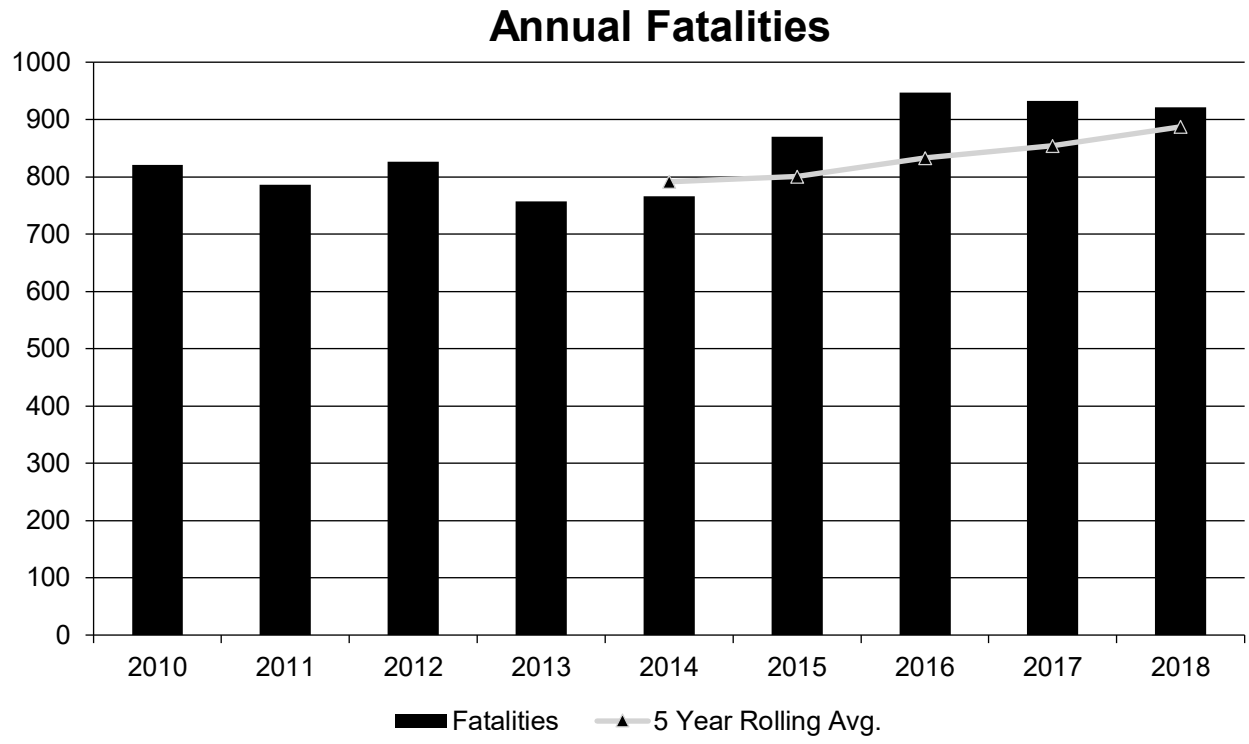
HSIP funds are reported at 90% (90/10) and OC funds are reported at 100% (100/0) of safety funded portions of projects.

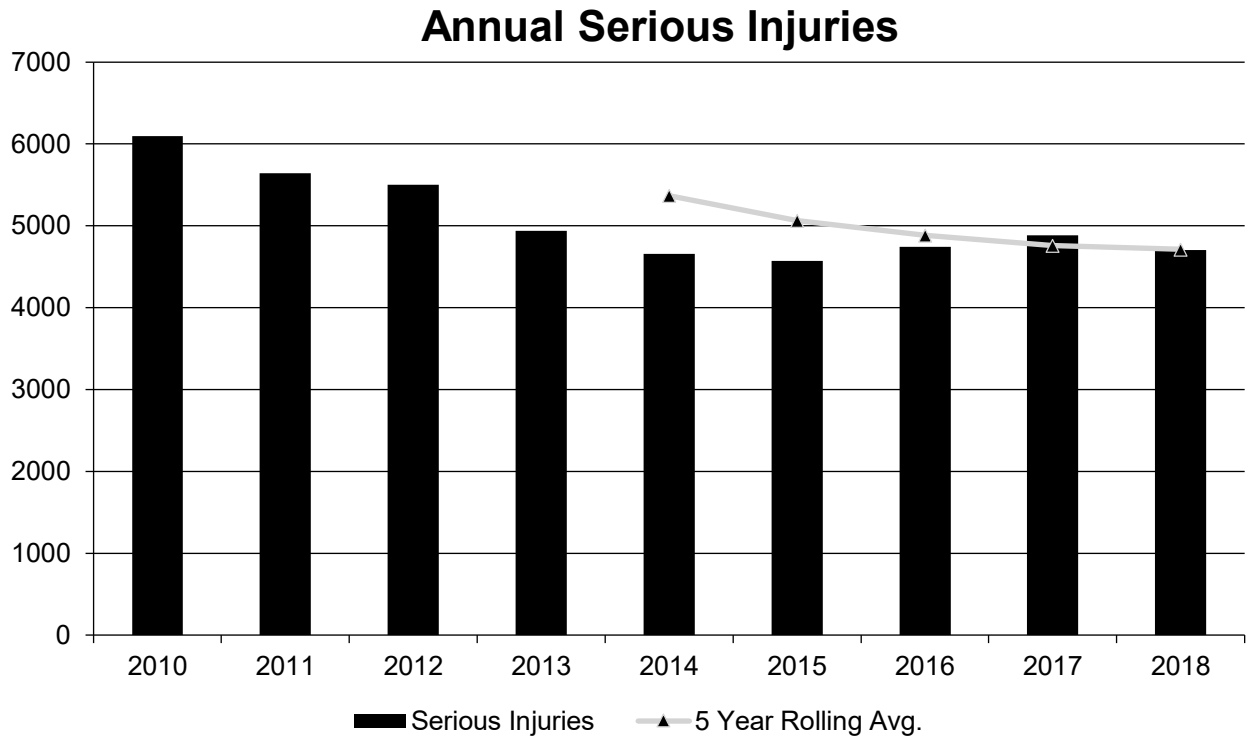
Safety Performance

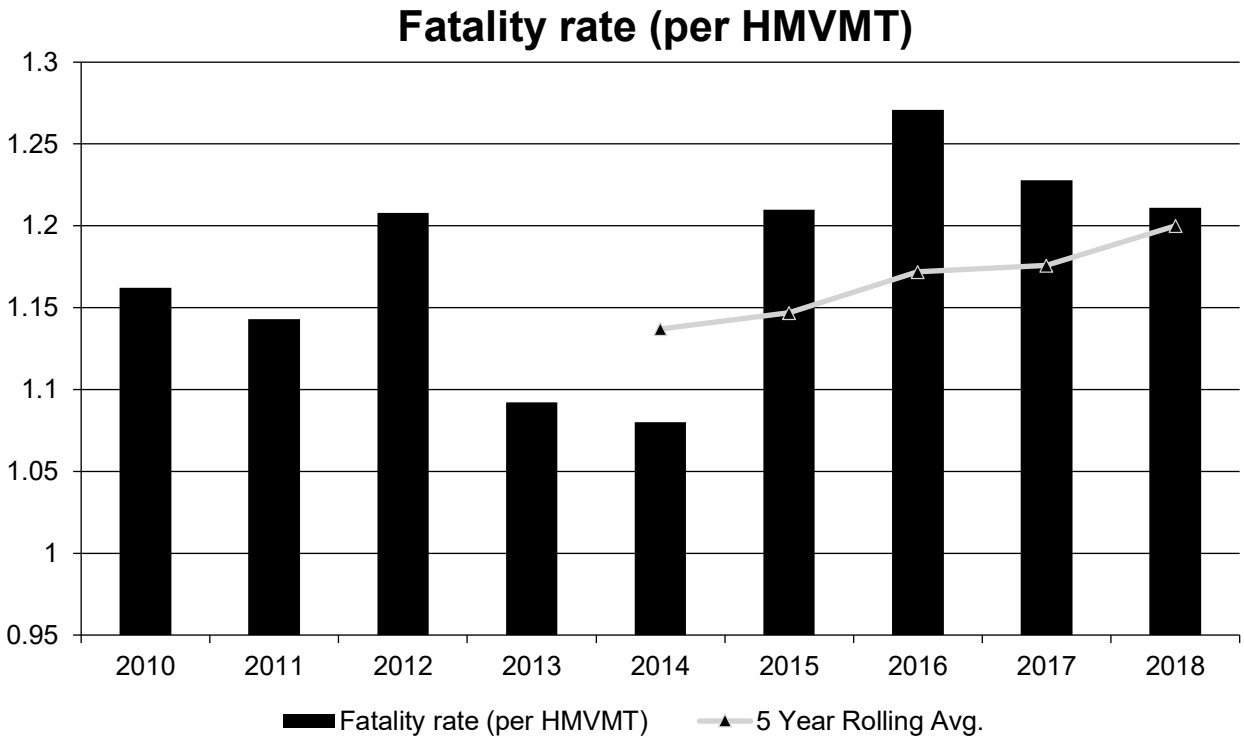
General Highway Safety Trends

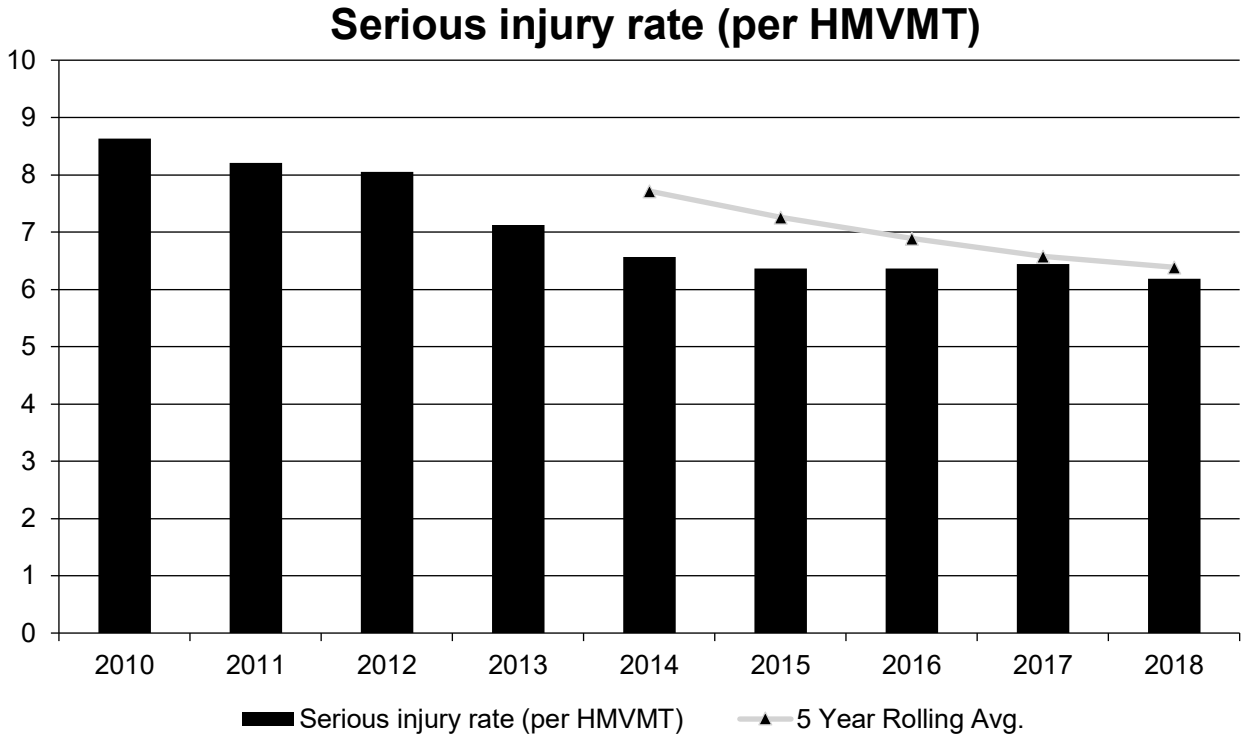
Present data showing the general highway safety trends in the State for the past five years.

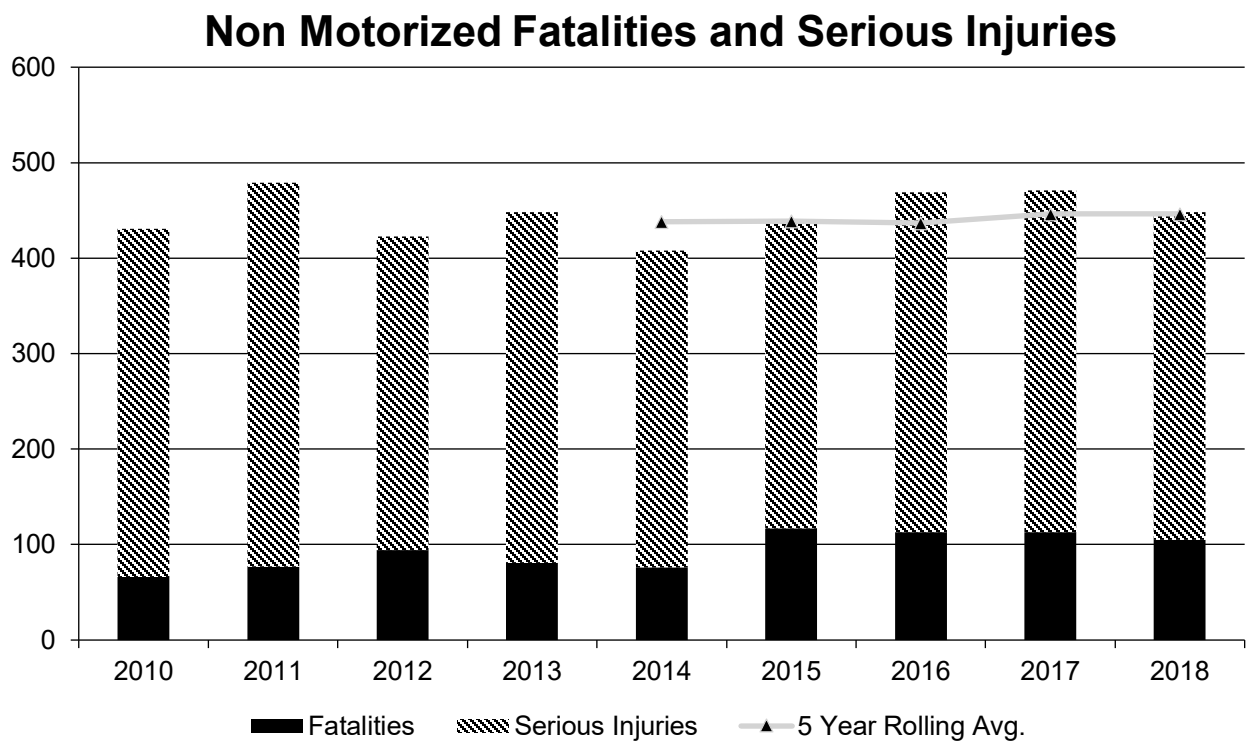
PERFORMANCE MEASURES	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fatalities	821	786	826	757	766	870	947	932	921
Serious Injuries	6,096	5,643	5,506	4,939	4,659	4,574	4,743	4,887	4,708
Fatality rate (per HMVMT)	1.162	1.143	1.208	1.092	1.080	1.210	1.271	1.228	1.211
Serious injury rate (per HMVMT)	8.631	8.203	8.049	7.124	6.568	6.362	6.365	6.440	6.190
Number non-motorized fatalities	66	77	94	81	76	117	113	113	105
Number of non-motorized serious injuries	365	402	329	367	332	319	356	358	343


Annual Fatalities
1000
900
800
700
600
500
400
300
200
100
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
7000
6000
5000
4000
3000
2000
1000
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
10
9
8
7
6
5
4
3
2
1
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



In previous reports, low power electric bicycles were not included in the non-motorized fatalities and serious injuries. These motorized bikes that do not meet motorcycle status (such as mopeds) are now included in the non-motorized totals starting in the 2016 data. Data for this report was compiled in August 2019.

Describe fatality data source.

State Motor Vehicle Crash Database

The fatality information for 2018 was not published in FARS at the time of this report.

To the maximum extent possible, present this data by functional classification and ownership.

Year 2018

Functional Classification	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Rural Principal Arterial (RPA) - Interstate	43.8	158.2	0.63	2.29
Rural Principal Arterial (RPA) - Other Freeways and Expressways	52	204.2	1.16	4.58
Rural Principal Arterial (RPA) - Other	66.2	235.2	1.89	6.7

Functional Classification	**Number of Fatalities (5-yr avg)**	**Number of Serious Injuries (5-yr avg)**	**Fatality Rate (per HMVMT) (5-yr avg)**	**Serious Injury Rate (per HMVMT) (5-yr avg)**
Rural Minor Arterial	91	380	2.59	10.81
Rural Minor Collector	20	92.4	3	13.8
Rural Major Collector	146.6	641.2	2.93	12.84
Rural Local Road or Street	77.4	398.8	1	5.14
Urban Principal Arterial (UPA) - Interstate	85	403.2	0.6	2.85
Urban Principal Arterial (UPA) - Other Freeways and Expressways	47.6	241.2	0.9	4.54
Urban Principal Arterial (UPA) - Other	86.4	638.4	1.51	11.18
Urban Minor Arterial	88.6	648.6	1.4	10.3
Urban Minor Collector	2.6	19	4.61	29.72
Urban Major Collector	36.6	276.4	1.21	9.11
Urban Local Road or Street	43.4	373.2	0.59	5.12

Year 2018

Roadways	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
State Highway Agency				
County Highway Agency				
Town or Township Highway Agency				
City or Municipal Highway Agency				
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency				
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)				
Indian Tribe Nation				
State System	651.6	3,081	1.29	6.11
City & County	235.6	1,632.4	1	6.96

Sample size may be an issue with some of the rates due to limited VMT data, such as Urban Minor Collectors. Data for this report was compiled in August 2019.

Provide additional discussion related to general highway safety trends.

The total annual vehicle miles traveled (VMT) for Missouri has climbed steadily since 2012. Missouri's VMT is now the highest it's been over the last decade. This increased amount of traffic increases the opportunity that a crash could occur. Despite this increase in VMT, Missouri's fatalities and serious injuries were down in 2018.

One of the areas that has shown significant improvement is the performance of rural major collectors. This functional class has shown a steady decline in crashes over the last few years.

There have been over 100 non-motorized fatalities over the last 4 years. MoDOT has partnered with FHWA to organize Safe Transportation for Every Pedestrian (STEP) workshops to promote pedestrian safety initiatives.

MoDOT received additional funds from FHWA through an Accelerating Safety Activities Program (ASAP). These funds are to assist the development of the Missouri Systemic Countermeasures to Improve Pedestrian Safety (MoSCIPS) project. This effort would use data-driven safety analysis to develop guidance to prioritize and select pedestrian countermeasures specific to Missouri's conditions.

Safety Performance Targets

Safety Performance Targets

Calendar Year 2020 Targets *

Number of Fatalities:859.3

Describe the basis for established target, including how it supports SHSP goals.

The target is based on our 2016 Strategic Highway Safety Plan (SHSP). In this plan, the goal is to have fewer than 700 fatalities by 2020. The 2019 target was based on the historical 5-year rolling average of fatalities, the 2020 goal in the SHSP, and extrapolating a 5-year rolling average target for 2019. This target is in line with the SHSP to reduce the number of fatalities on Missouri's roadways.

Number of Serious Injuries:4505.4

Describe the basis for established target, including how it supports SHSP goals.

The target is based on our initial goal to have fewer than 4000 serious injuries by 2020. The 2020 target was based on the historical 5-year rolling average of serious injuries, the initial 2020 goal assessed at the time of the first target setting effort, and extrapolating a 5-year rolling average target for 2020. This target is in line with the SHSP to reduce the number of serious injuries on Missouri's roadways.

Fatality Rate:1.130

Describe the basis for established target, including how it supports SHSP goals.

The fatality rate was calculated by taking a 5-year rolling average of historical and forecasted annual fatality rates. Historical fatality rates were derived from observed fatality totals and estimated Annual Vehicle Miles Traveled (VMT). Forecasted rates were determined by using the number of fatalities target (developed from the SHSP target) and dividing by the estimated Annual VMT. It was assumed that Annual VMT would grow at a rate of 1% per year. This target is in line with the SHSP to reduce the number of fatalities on Missouri's roadways.

Serious Injury Rate:5.953

Describe the basis for established target, including how it supports SHSP goals.

The serious injury rate was calculated by taking a 5-year rolling average of historical and forecasted annual serious injury rates. Historical serious injury rates were derived from observed serious injury totals and estimated Annual Vehicle Miles Traveled (VMT). Forecasted rates were determined by using the number of serious injuries target and dividing by the estimated Annual VMT. It was assumed that Annual VMT would grow at a rate of 1% per year. This target is in line with the SHSP to reduce the number of serious injuries on Missouri's roadways.

Total Number of Non-Motorized Fatalities and Serious Injuries:437.4

Describe the basis for established target, including how it supports SHSP goals.

The target is based on our initial goal to have fewer than 400 non-motorized fatalities and serious injuries by 2020. The 2020 target was based on the historical 5-year rolling average of non-motorized fatalities and serious injuries, the initial 2020 goal assessed at the time of the first target setting effort, and extrapolating a 5-year rolling average target for 2020. This target is in line with the SHSP to reduce the number of serious injuries on Missouri's roadways.

Targets based on 13% fatality reduction, 8% serious injury reduction, 1% VMT increase and 5 % non-motorized reduction

Performance Measures for Fatalities, Fatality Rate, and Serious Injuries were set based on crash data available in April 2019 for use in the Highway Safety Plan.

Performance Measures for Serious Injury Rate and Non-Motorized Fatalities and Serious Injuries were set based on crash data available in August 2019 for use in the Highway Safety Improvement Program Annual Report.

Describe efforts to coordinate with other stakeholders (e.g. MPOs, SHSO) to establish safety performance targets.

For over 15 years, Missouri's Highway Safety Office has been located within MoDOT which promotes a collaborative environment between engineering and safety staff. MoDOT updated its Strategic Highway Safety Plan (SHSP) using a collaborative, team approach from August 2015 to October 2016. The team included external partners from emergency management, FHWA, FMCSA, hospitals, law enforcement, Missouri Department of Revenue, MPOs, NHTSA, Regional Planning Commissions (RPCs), and universities. The 2016 SHSP team identified a goal of fewer than 700 fatalities by 2020. Revisions to the SHSP were shared periodically with the MPOs and RPCs.

Extensive coordination occurred between FHWA, MoDOT, MPO, and NHTSA staff when setting the Safety Targets. Missouri safety data was reviewed for trends, along with assumptions and challenges. MoDOT conducts monthly calls with planning stakeholders. In 2016, a target coordinating process was presented with feedback and consensus from the MPOs. In March, MoDOT calculated statewide and MPO data trends for each safety performance measure. This information was shared and discussed with MoDOT"s Executive Team, MPOs FHWA, and NHTSA. After review of feedback from partner groups, the methods and assumptions used to develop the performance targets were finalized in April. MoDOT then applied the agreed upon methodology to develop the safety performance targets and communicated them with the partners.

Does the State want to report additional optional targets?

No

Describe progress toward meeting the State's 2018 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

Based on the data available at the time of reporting, the actual 2018 performance was worse than the 2018 targets, for each of the safety performance targets. This is primarily due to an increase in fatalities and serious injuries which occurred within the 5 year average reporting period. This is consistent with what was experienced nationally during this timeframe, meaning there were external factors, beyond the HSIP program, that were influencing the increase in fatalities. Fatalities reached a low point in 2013 with 757 fatalities and climbed to 947 in 2016. A similar increasing trend occurred for serious injuries which climbed from 4573 in 2015 to 4887 in 2017. This increasing trend in fatalities and serious injuries has since been halted and Missouri is now seeing a decreasing number of fatalities and serious injuries. This decreasing trend could be attributed to the systemic initiatives and high benefit spot treatments being deployed as part of Missouri's HSIP program as well as other efforts attempting to change the safety culture of Missouri's motorists.

Applicability of Special Rules

Does the HRRR special rule apply to the State for this reporting period?
No

Provide the number of older driver and pedestrian fatalities and serious injuries 65 years of age and older for the past seven years.

PERFORMANCE MEASURES	2012	2013	2014	2015	2016	2017	2018
Number of Older Driver and Pedestrian Fatalities	103	110	120	137	154	135	143
Number of Older Driver and Pedestrian Serious Injuries	378	352	355	361	367	369	424

Data for this report was compiled in August 2019.

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Benefit/Cost Ratio
- Change in fatalities and serious injuries
- Lives saved
- Other-Evaluation of individual HSIP projects and programs

MoDOT has begun reporting on the safety benefits, such as benefit/cost ratio and lives saved, of all projects utilizing HSIP funds as part of an internal assessment of our HSIP program. This assessment is used as part of a vetting process for safety projects planned to be incorporated into the State Transportation Improvement Program.

Based on the measures of effectiveness selected previously, describe the results of the State's program level evaluations.

MoDOT will evaluate specific HSIP projects to assess their effectiveness at reducing fatal and serious injury crashes. This information is then used to promote or discourage the use of a particular safety countermeasure

For systemic improvements, MoDOT tracks the change in the number of fatalities as the amount of a safety improvement is further deployed. This allows MoDOT to monitor the safety benefits returned on its continued investment of a systemic strategy. One systemic strategy evaluated was the implementation of chevrons on curves where advisory speeds are at lead 15 mph less than posted speeds. Between 2014 and 2018, horizontal curve fatalities and serious injuries on minor roads decreased from 622 to 513. This is based on crash data pulled in August 2019.

What other indicators of success does the State use to demonstrate effectiveness and success of the Highway Safety Improvement Program?

- HSIP Obligations

MoDOT's planning office tracks the programming of safety funds to ensure they do not lapse on HSIP funds.

There are other success indicators that MoDOT has seen some improvement but they are not currently being reported on. These indicators include:

- # of RSAs completed
- Increased awareness of safety and data-driven process
- Increased focus on local road safety
- More systemic programs

Describe significant program changes that have occurred since the last reporting period.

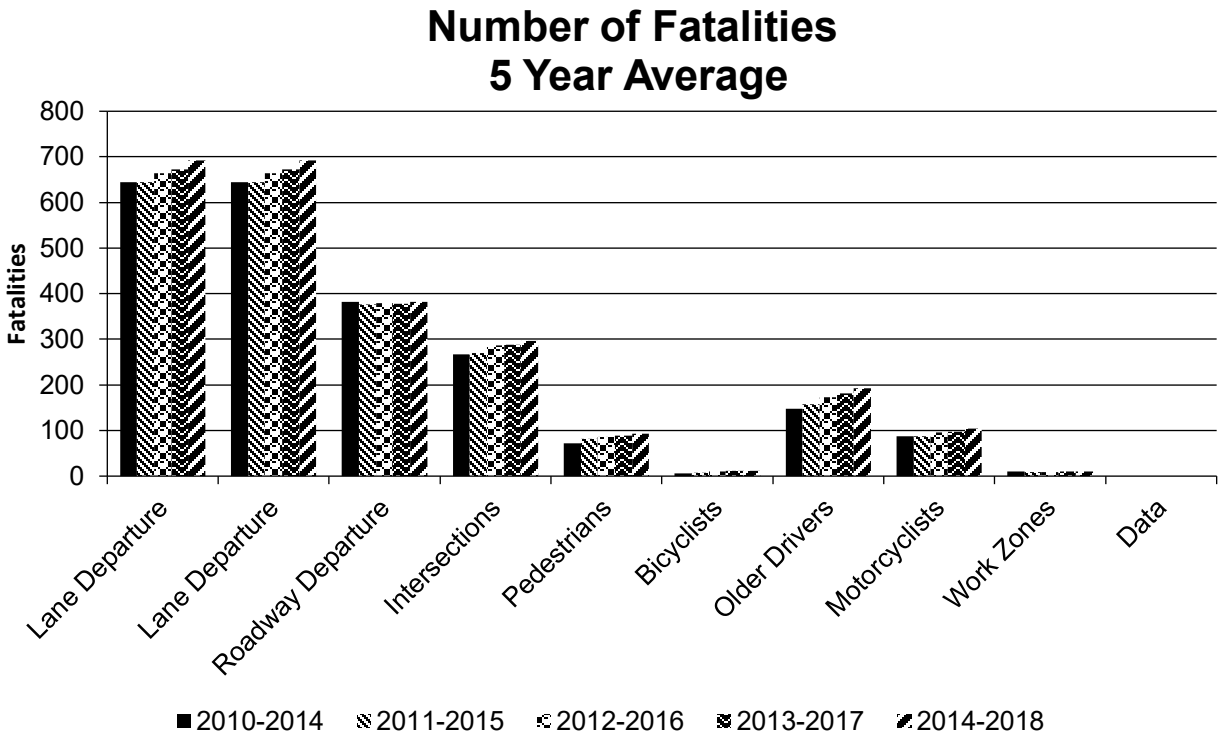
MoDOT has begun reporting on the safety benefits, such as benefit/cost ratio and lives saved, of all projects utilizing HSIP funds as part of an internal assessment of our HSIP program. This assessment is used as part of a vetting process for safety projects planned to be incorporated into the State Transportation Improvement Program.

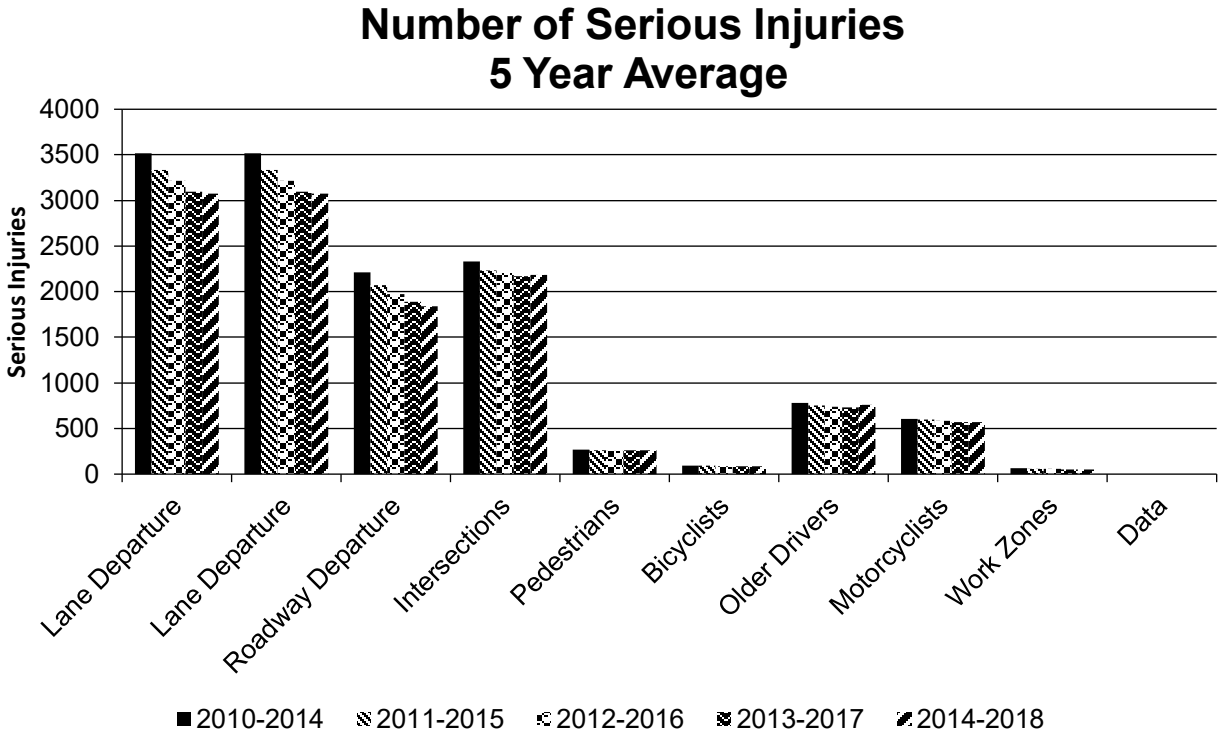
Effectiveness of Groupings or Similar Types of Improvements

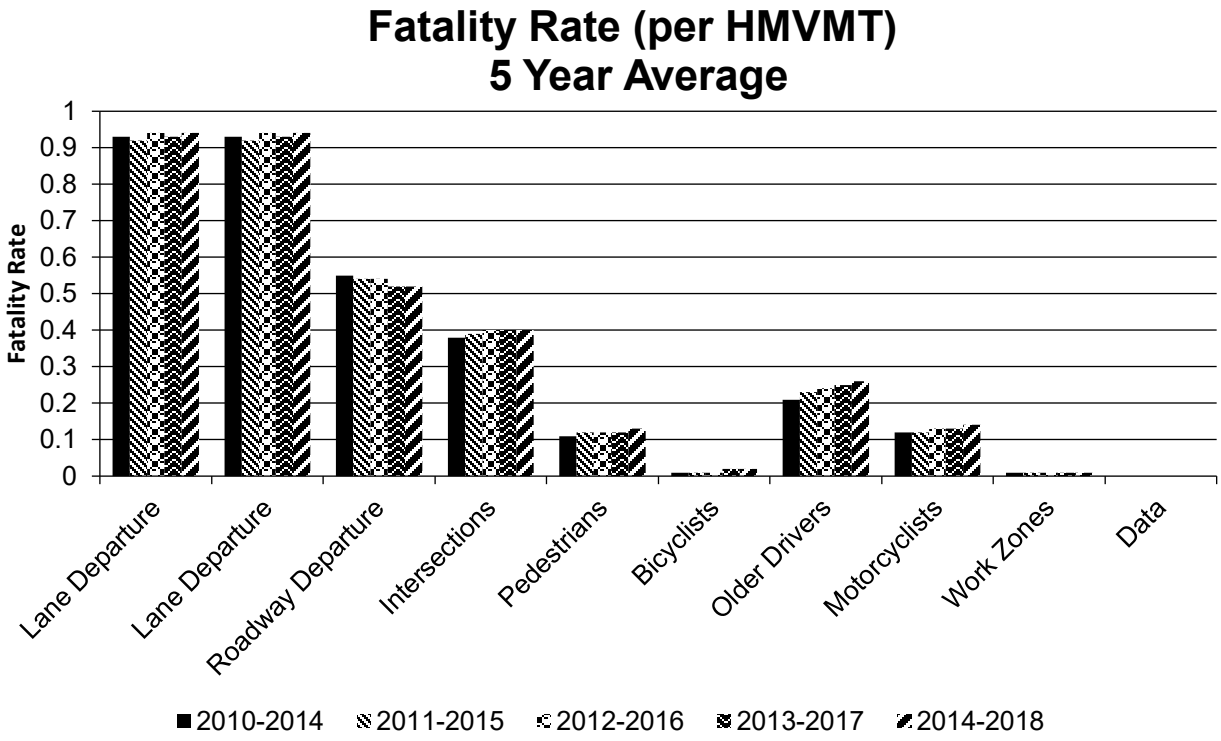
Present and describe trends in SHSP emphasis area performance measures.

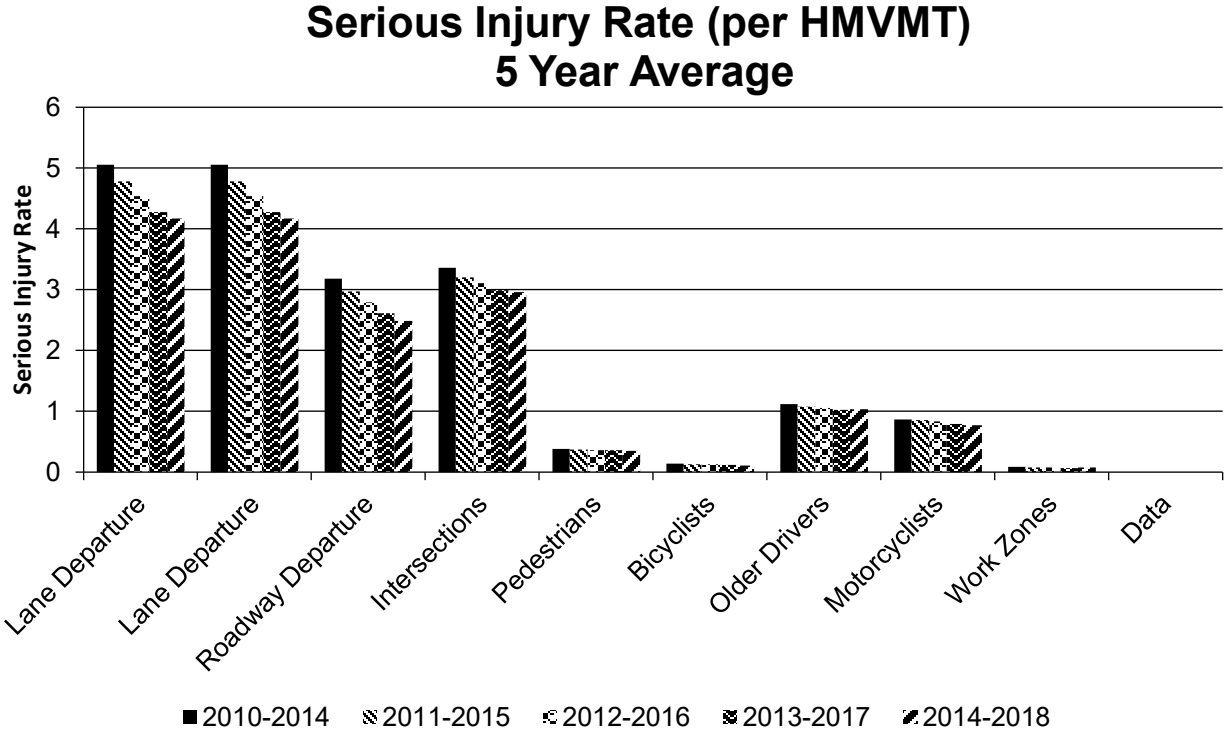
Year 2018

SHSP Emphasis Area	Targeted Crash Type	Number of Fatalities (5-yr avg)	Number of Serious Injuries (5-yr avg)	Fatality Rate (per HMVMT) (5-yr avg)	Serious Injury Rate (per HMVMT) (5-yr avg)
Lane Departure		691.6	3,076.8	0.94	4.17
Roadway Departure		381.8	1,836.6	0.52	2.49
Intersections		296.6	2,187	0.4	2.96
Pedestrians		93.4	258.4	0.13	0.35
Bicyclists		11.4	83.2	0.02	0.11
Older Drivers		192.6	757.2	0.26	1.03
Motorcyclists		104.8	570.8	0.14	0.77
Work Zones		10.8	54.4	0.01	0.08
Data		0	0	0	0


Number of Fatalities
5 Year Average
Fatalities
800
700
600
500
400
300
200
100
0
Lane Departure
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018


Number of Serious Injuries
5 Year Average
Serious Injuries
4000
3500
3000
2500
2000
1500
1000
500
0
Lane Departure
Lane Departure
Roadway Departure
Intersections
Pedestrians
Bicyclists
Older Drivers
Motorcyclists
Work Zones
Data
2010-2014
2011-2015
2012-2016
2013-2017
2014-2018





Data for this report was compiled in August 2019.

Has the State completed any countermeasure effectiveness evaluations during the reporting period?

No

We've begun evaluating the systemic application of doubling up intersection signage, but the data is too limited to draw conclusions.

Project Effectiveness

Provide the following information for previously implemented projects that the State evaluated this reporting period.

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
US 36 from 0.8 miles east of Rte. AC to 0.7 miles east of Rte. 31 in Dekalb County.	Urban Principal Arterial (UPA) - Other Freeways and Expressways	Shoulder treatments	Pave existing shoulders	13.00	10.00	1.00		1.00		6.00	7.00	21.00	17.00	14.885
RT A from Rte. 169 to Rte. 371 near St. Joseph.	Urban Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	4.00	3.00					2.00	3.00	6.00	6.00	-0.355
MO 752 at the intersection with Gordon Street in St. Joseph.	Urban Principal Arterial (UPA) - Other	Pedestrians and bicyclists	Pedestrian beacons								1.00		1.00	-9.525
MO 16 from Rte. 6 to Rte. B in Canton (two disconnected sections).	Rural Major Collector	Shoulder treatments	Pave existing shoulders	13.00	8.00			1.00	2.00	7.00	3.00	21.00	13.00	0.191
US 63 at Rte. M at Atlanta.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Access management	Change in access - close or restrict existing access	2.00		2.00						4.00		38.139
US 63 at Rte. B and Rte. P at Clark.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Access management	Change in access - close or restrict existing access		1.00	1.00		1.00				2.00	1.00	13.729
US 63 at Rte. K and Rte. Z at Cairo.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Intersection geometry	Auxiliary lanes - modify right-turn lane offset		4.00			2.00				2.00	4.00	7.137
MO 47 from 1.4 miles south of Rte. CC to 0.7 mile north of Rte. N near Warrenton.	Rural Minor Arterial	Alignment	Horizontal curve realignment	6.00						6.00		12.00		0.315

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
IS 49 at Rte. 58 in Belton.	Urban Principal Arterial (UPA) - Interstate	Interchange design	Interchange design - other	6.00	1.00					7.00	1.00	13.00	2.00	1.585
MO 2 from Commercial Street in the city of Harrisonville to Rte. ZZ.	Urban Minor Arterial	Shoulder treatments	Shoulder treatments - other	34.00	22.00	2.00		2.00	3.00	18.00	18.00	56.00	43.00	19.751
MO 7 from Colbern Road to Rte. 50 and from Cass County Line to the city of Harrisonville.	Urban Principal Arterial (UPA) - Other	Roadway	Roadway - other	12.00	23.00	1.00	1.00	5.00	4.00	8.00	10.00	26.00	38.00	0.202
MO 150 from Rte. 291 in Greenwood to Rte. E.	Urban Principal Arterial (UPA) - Other	Shoulder treatments	Widen shoulder - paved or other	6.00	12.00			5.00	1.00	2.00	3.00	13.00	16.00	3.037
US 50 at the intersection of Rte. 58 in Centerview.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadway	Roadway narrowing (road diet, roadway reconfiguration)	9.00	1.00			1.00		4.00	1.00	14.00	2.00	1.828
MO 10 from Rte. 13 to the east leg of Old Rte. 10.	Rural Principal Arterial (RPA) - Other	Roadway	Pavement surface - miscellaneous											0
MO 10 from Merrifield Lane to Rte. FF.	Rural Principal Arterial (RPA) - Other	Roadway	Pavement surface - miscellaneous											0
RT D from Rte. 58 to Rte. Y.	Urban Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	13.00	14.00	1.00		2.00	2.00	10.00	3.00	26.00	19.00	18.458
RT YY from Rte. Y to Rte. C.	Urban Major Collector	Shoulder treatments	Widen shoulder - paved or other	4.00	8.00			2.00		3.00	2.00	9.00	10.00	3.021
US 169 from Smithville city limits to Rte. W, on Rte. 69 from Rte. 92 to Rte. D and on Rte. 45 from	Urban Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	52.00	48.00	1.00	2.00	2.00	5.00	26.00	24.00	81.00	79.00	-5.764

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
Rte. JJ to Spur 45.														
MO 33 from Rte. PP to Rte. 69 in Kearney.	Urban Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	50.00	59.00	1.00	2.00	5.00		26.00	19.00	82.00	80.00	-8.655
RT A from Rte. 92 to end of state maintenance.	Urban Major Collector	Shoulder treatments	Widen shoulder - paved or other	10.00	2.00				1.00	5.00	5.00	15.00	8.00	-0.573
MO 13 from Bus. 13 to I-70.	Rural Principal Arterial (RPA) - Other	Shoulder treatments	Widen shoulder - paved or other	28.00	45.00			4.00	2.00	14.00	14.00	46.00	61.00	2.235
MO 52 from the Henry County Line to Rte. 65.	Rural Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	24.00	21.00	1.00	1.00	1.00	1.00	9.00	2.00	35.00	25.00	3.24
MO 152 from North Congress Avenue to Flintlock Road.	Urban Principal Arterial (UPA) - Other Freeways and Expressways	Roadside	Barrier - cable	82.00	120.00	2.00		4.00		31.00	45.00	119.00	165.00	7.897
MO 273 from Rte. 45 to Rte. 92 Spur.	Urban Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	9.00	7.00	2.00				5.00	6.00	16.00	13.00	131.089
RT C from Rte. O to Rte. 240 and Rte. 240 from Rte. 41 to the Missouri River Bridge.	Rural Major Collector	Roadway	Pavement surface - miscellaneous	5.00								5.00		0.103
US 54 at Key Largo Road and Osage Beach Parkway.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Access management	Change in access - close or restrict existing access	2.00	5.00	1.00	1.00	1.00		3.00	6.00	7.00	12.00	0.209
US 54 on the eastbound and westbound lanes near Madison Street in Jefferson City.	Urban Principal Arterial (UPA) - Other Freeways and Expressways	Roadway	Pavement surface - high friction surface	58.00	9.00			3.00		22.00	1.00	83.00	10.00	53.941

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
RT M from Route B in Wardsville to Route 50 near Taos.	Urban Major Collector	Roadway signs and traffic control	Curve-related warning signs and flashers	3.00	2.00					1.00		4.00	2.00	13.575
MO 32 from east of Salem to Rte. 72.	Rural Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	41.00	30.00	1.00		10.00	3.00	10.00	15.00	62.00	48.00	15.644
IS 270 on I-270 from east of I-170 to west of I-170 and west of Lilac to east of Bellefontaine Road and Rte. 67 from Cinder Road to south of the Misso	Urban Principal Arterial (UPA) - Interstate	Shoulder treatments	Pave existing shoulders	6.00	6.00				1.00		4.00	6.00	11.00	-118.73
IS 170 from I-270 to Page Avenue.	Urban Principal Arterial (UPA) - Interstate	Roadside	Barrier- metal	323.00	370.00	1.00	2.00	7.00	5.00	99.00	112.00	430.00	489.00	-11.029
RT D at Skinker Parkway, Hodiamont Avenue and Union Blvd.	Urban Principal Arterial (UPA) - Other	Intersection traffic control	Systemic improvements - signal-controlled	18.00	33.00				1.00	11.00	18.00	29.00	52.00	-2.706
MO 7 from Rte. 65 to Camden County.	Rural Principal Arterial (RPA) - Other	Roadway	Rumble strips - edge or shoulder	7.00	7.00		2.00		1.00	3.00	1.00	10.00	11.00	-18.668
US 160 from County Road 9 to Rte. 123 near Willard.	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	3.00	7.00	1.00		3.00		2.00	3.00	9.00	10.00	28.754
MO 125 from Rte. 60 to Smyrna Road.	Urban Major Collector	Roadway	Rumble strips - edge or shoulder	1.00				1.00		1.00	2.00	3.00	2.00	1.854
MO 76 from Route 173 to Rocky Top Way in Reeds Spring.	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	9.00	11.00	1.00		2.00	2.00	11.00	5.00	23.00	18.00	26.74

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
MO 165 at Table Rock Lake Dam.	Rural Major Collector	Roadside	Barrier- metal											0
MO 265 from Table Rock Dam to Rte. 65 and on Rte. 165 from Rte. 76 to Rte. 265 in Branson.	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	4.00	4.00			2.00	1.00	6.00	1.00	12.00	6.00	18.607
MO 7 on Rte.7 from Rte. PP in Tightwad to Rte. 65 in Warsaw, Rte. 83 from Rte. 65 to Rte. MM, and Rte. U from Mora Road to Rte. 52.	Rural Principal Arterial (RPA) - Other	Roadway	Rumble strips - edge or shoulder	29.00	5.00	1.00	1.00	2.00	2.00	9.00	5.00	41.00	13.00	2.081
MO 14 from Rte. M (Nicholas Road) in Nixa to Rte. W in Ozark.	Urban Minor Arterial	Roadway	Rumble strips - edge or shoulder	61.00	52.00	2.00		4.00	3.00	35.00	23.00	102.00	78.00	121.885
MO 64 from Rte. 65 to Rte. 64A.	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	6.00	7.00					6.00	10.00	12.00	17.00	-0.738
MO 32 from east of Rte. 65 to Rte. P.	Rural Minor Arterial	Roadway	Rumble strips - edge or shoulder	15.00	17.00		4.00		1.00	8.00	14.00	23.00	36.00	-117.513
MO 360 on the James River Freeway westbound ramp to I-44.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadway	Pavement surface - high friction surface			1.00		1.00			1.00	2.00	1.00	110.513
MO 125 from Ozarks Transportation Organization boundary to I-44 in Strafford.	Urban Major Collector	Roadway	Rumble strips - edge or shoulder	3.00	2.00				1.00	3.00	2.00	6.00	5.00	-3.292
MO 125 from east of Rte. 65 in Fair Grove	Urban Major Collector	Roadway	Rumble strips - edge or shoulder	5.00	11.00	1.00	1.00		1.00	3.00	3.00	9.00	16.00	-3.599

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
to the Ozarks Transportation Organization boundary.														
US 160 from Rte. 65 to Rte. 76 east of Forsyth.	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	80.00	157.00	3.00	1.00	15.00	9.00	40.00	16.00	138.00	183.00	52.693
MO 176 from Rte. 65 to Rte. 160.	Rural Major Collector	Roadway	Rumble strips - edge or shoulder	2.00	2.00					3.00	1.00	5.00	3.00	1.281
MO 34 from Rte. 51 in Marble Hill to Rte. 72/34 intersection.	Urban Principal Arterial (UPA) - Other	Shoulder treatments	Widen shoulder - paved or other	53.00	51.00	1.00	2.00	8.00	3.00	21.00	19.00	83.00	75.00	-3.017
RT C from Rte. 25 to Rte. 51.	Rural Major Collector	Shoulder treatments	Widen shoulder - paved or other	10.00	3.00			2.00	1.00	5.00	2.00	17.00	6.00	1.377
US 67 from Madison County line to 4.1 miles south of Butler County line.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadway	Roadway widening - add lane(s) along segment	113.00	97.00	3.00	2.00	3.00	5.00	28.00	26.00	147.00	130.00	201.746
RT W from Rte. 177 to LaSalle Avenue near Cape Girardeau.	Urban Major Collector	Roadway	Pavement surface - miscellaneous	11.00	18.00		1.00	3.00		5.00	7.00	19.00	26.00	-39.487
MO 177 from Rte. 61 to Rte. J.	Urban Major Collector	Roadway	Pavement surface - miscellaneous	19.00	29.00				4.00	7.00	7.00	26.00	40.00	-6.547
MO 106 from Rte. H to Rte. 21.	Rural Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	4.00	7.00		1.00			3.00	2.00	7.00	10.00	-4.88
US 67 at the intersection of Rtes. 67, 221, and W in Farmington.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Interchange design	Interchange design - other	35.00	11.00		1.00			2.00		37.00	12.00	-2.09
MO 47 from Rte. 21 to Rte. 67.	Rural Major Collector	Shoulder treatments	Widen shoulder - paved or other	110.00	105.00	3.00	1.00	3.00	8.00	27.00	43.00	143.00	157.00	11.142

LOCATION	FUNCTIONAL CLASS	IMPROVEMENT CATEGORY	IMPROVEMENT TYPE	PDO BEFORE	PDO AFTER	FATALITY BEFORE	FATALITY AFTER	SERIOUS INJURY BEFORE	SERIOUS INJURY AFTER	ALL OTHER INJURY BEFORE	ALL OTHER INJURY AFTER	TOTAL BEFORE	TOTAL AFTER	EVALUATION RESULTS (BENEFIT/COST RATIO)
RT Y on Rte. Y in St. Francois and Ste. Genevieve counties.	Rural Major Collector	Shoulder treatments	Widen shoulder - paved or other	54.00	47.00	3.00	3.00	4.00	4.00	17.00	8.00	78.00	62.00	0.63
RT O from Rte. 61 to Rte. 32.	Rural Major Collector	Shoulder treatments	Widen shoulder - paved or other	20.00	15.00	1.00		2.00	1.00	7.00	4.00	30.00	20.00	20.616
MO 114 from Rte. 25 to Rte. 60 and on city streets in Dexter.	Rural Minor Arterial	Shoulder treatments	Widen shoulder - paved or other	17.00	18.00			2.00		13.00	10.00	32.00	28.00	1.45
MO 34 0.6 mile west of Rte. ZZ at Glen Allen to 1 mile east of Rte. ZZ. Project involves bridge F0747R.	Rural Principal Arterial (RPA) - Other	Shoulder treatments	Widen shoulder - paved or other	7.00	1.00					5.00	1.00	12.00	2.00	1.682
US 61 from Sikeston to New Madrid.	Rural Major Collector	Roadway	Pavement surface - miscellaneous	67.00	85.00	1.00	2.00	10.00	10.00	40.00	25.00	118.00	122.00	-182.928
MO 51 from McBride to Perryville.	Rural Minor Arterial	Roadway	Pavement surface - miscellaneous	22.00	18.00			1.00	1.00	8.00	10.00	31.00	29.00	-0.747
Various bridges statewide.	Rural Principal Arterial (RPA) - Other Freeways and Expressways	Roadside	Barrier- metal	49.00	65.00	2.00	1.00	3.00	7.00	22.00	36.00	76.00	109.00	0.695
Various intersections statewide.	Rural Principal Arterial (RPA) - Other	Roadway delineation	Roadway delineation - other											0
Various workzones statewide.	Rural Principal Arterial (RPA) - Other	Non-infrastructure	Enforcement											0

The projects included above were completed during calendar year 2014, and have 3 years of before and after crash data. Combined, these projects reduced 10 fatal crashes, 34 serious injury crashes, and 65 minor injury crashes.

Some of the projects implemented during this timeframe were systemic improvements. These improvements may have been deployed at locations with characteristics associated where crashes could occur without necessarily having an immediate history of severe crashes.

Compliance Assessment

What date was the State's current SHSP approved by the Governor or designated State representative?

10/17/2016

What are the years being covered by the current SHSP?

From: 2016 To: 2020

When does the State anticipate completing it's next SHSP update?

2020

Provide the current status (percent complete) of MIRE fundamental data elements collection efforts using the table below.

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
ROADWAY SEGMENT	Segment Identifier (12)	100	100					100	100	100	100
	Route Number (8)	100	100								
	Route/Street Name (9)	100	100								
	Federal Aid/Route Type (21)	100	100								
	Rural/Urban Designation (20)	100	100					100	100		
	Surface Type (23)	100	80					100	30		
	Begin Point Segment Descriptor (10)	100	100					100	100	100	100
	End Point Segment Descriptor (11)	100	100					100	100	100	100
	Segment Length (13)	100	100								
	Direction of Inventory (18)	100	100								
	Functional Class (19)	100	100					100	100	100	100
	Median Type (54)	30	30								
	Access Control (22)	100	20								
	One/Two Way Operations (91)	100	20								

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Number of Through Lanes (31)	100	80					100	20		
	Average Annual Daily Traffic (79)	100	80					100			
	AADT Year (80)	100	80								
	Type of Governmental Ownership (4)	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120)			100	100						
	Location Identifier for Road 1 Crossing Point (122)			100	100						
	Location Identifier for Road 2 Crossing Point (123)			100	100						
	Intersection/Junction Geometry (126)			100	100						
	Intersection/Junction Traffic Control (131)			100	80						
	AADT for Each Intersecting Road (79)			100	80						
	AADT Year (80)			100	80						
	Unique Approach Identifier (139)			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178)					100	100				
	Location Identifier for Roadway at Beginning of Ramp Terminal (197)					100	100				
	Location Identifier for Roadway at Ending Ramp Terminal (201)					100	100				
	Ramp Length (187)					100	100				

ROAD TYPE	MIRE NAME (MIRE NO.)	NON LOCAL PAVED ROADS - SEGMENT		NON LOCAL PAVED ROADS - INTERSECTION		NON LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
		NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	STATE	NON-STATE	
	Roadway Type at Beginning of Ramp Terminal (195)					100	100				
	Roadway Type at End Ramp Terminal (199)					100	100				
	Interchange Type (182)					100	100				
	Ramp AADT (191)					100	100				
	Year of Ramp AADT (192)					100	100				
	Functional Class (19)					100	100				
	Type of Governmental Ownership (4)					100	100				
Totals (Average Percent Complete):		**96.11**	**82.78**	**100.00**	**92.50**	**100.00**	**100.00**	**100.00**	**72.22**	**100.00**	**100.00**

*Based on Functional Classification

Describe actions the State will take moving forward to meet the requirement to have complete access to the MIRE fundamental data elements on all public roads by September 30, 2026.

MoDOT will use several methods over the next several years to meet the requirements for the collection of FDE's on all public roads. MoDOT will prioritize these needs by addressing the Non-Local Paved roads data gaps first.

Surface Type/Number of Lanes/one-two way operations/access control/Median Type – These data items will be addressed through the cooperative program we have with our local authorities that ensures we have complete and correct geospatial network. As we continue these reviews in the future, we will ask them to provide these additional four items. Also, much of this data can be collected through other sources such as aerial photography and video logging. The targeted completion data for the collection and storage of this data is December 31, 2023.

The second priority will be the Local Paved Roads.

Surface Type/Number of through lanes – These items will be collected at the same time they are collected on Non-Local Paved roads. Since geospatial reviews include all public roads, this data will have already been collected.

AADT – it is estimated that an additional 80,000 traffic count locations will be needed to fulfill this requirement. Based on historical cost and practices, this will equate to an additional cost of $3 million annually. After a complete inventory of the other FDE's is available, a better estimate will be able to be established. The funding required to collect these additional volume counts will come at the expense of an equal value of safety improvements on the system. In addition, MoDOT has worked with several local agencies to "share" traffic data, but there has been little success. Few agencies collect traffic data in a manner that allows the calculation of AADT. Local government collect traffic data, often one time only, for specific purposes like signal timing. Local agencies do not have permanent sites or a history of short term counts available to create AADT's. Assuming that MoDOT would receive an additional $3 million annually and choose to spend it on our traffic collection program, the AADT data for Local paved Roads could be completed by September 30, 2026.

Did the State conduct an HSIP program assessment during the reporting period?

No

The last HSIP assessment took place in 2016 and highlighted the strengths and weaknesses of Missouri's HSIP process. Some of the program strengths identified include:

• The ability to align its safety projects with other transportation improvements to save on costs and extend HSIP benefits.
• The flexibility for each district to program HSIP funds to projects that best suit the needs of their region.
• The systemic approach to safety improvements, which has been widely regarded as a best practice nationally.

The following are some of the focus areas to continue improving the HSIP program:

• Strong relationships and partnerships between State and local agencies are key to successful HSIP local road safety policies.
• Local agencies and officials often need technical support or techinical guianace to overcome technical expertise barriers.
• Data driven and systemic safety improvement practices lend authority to project selection decisions and make it easier to work with stakeholders.
• Regional or county/parish safety plans can be a useful tool for guiding project selection and spending.
• Application and implementation procedures need to be documented but flexible enough to handle unique circumstances and needs.

When does the State plan to complete its next HSIP program assessment.

2020

Optional Attachments

Program Structure:

Project Implementation:

Safety Performance:

Evaluation:

Compliance Assessment:

Glossary

5 year rolling average: means the average of five individuals, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area: means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project: means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT: means hundred million vehicle miles traveled.

Non-infrastructure projects: are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule: applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure: means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds: mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification: means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP): means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systematic: refers to an approach where an agency deploys countermeasures at all locations across a system.

Systemic safety improvement: means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer: means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.